Exemption No. 6731

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98055-4056

In the matter of the petition of **Bombardier Inc. Canadair** for an exemption from 14 CFR § 25.571(e)(1), Amendment 25-72	**Regulatory Docket No. 29100**

GRANT OF EXEMPTION

By letter of October 29, 1997, Mr. W. B. Remington, Chief Airworthiness Engineer, Bombardier, Inc. Canadair, PO Box 6087, Station Centre-Ville, Montreal, Quebec, H3C 3G9, Canada, petitioned for an exemption from the four pound bird strike requirement of 14 CFR § 25.571(e)(1) from "V_C at sea level to 8,000 feet" in favor of "V_C at sea level or 0.85 V_C at 8,000 feet, whichever is more critical."

Section of the FAR affected:

Section 25.571(e)(1) requires that the airplane be capable of successfully completing a flight during which likely structural damage occurs as a result of impact with a four pound bird at V_C at sea level to 8,000 feet.

Related Sections of the FAR:

Section 25.631 requires that the empennage structure be designed to assure capability of continued safe flight and landing of the aircraft after impact with an 8-pound bird at V_C at sea level.

ANM-98-010-E

Section 25.775 requires that the windshield panes directly in front of the pilots be able to withstand, without penetration, the impact of a 4-pound bird at V_C at sea level.

The petitioner's supportive information is as follows:

The petitioner bases its request on FAA ANM-100 letter dated Dec. 9, 1992. In that letter, the FAA stated that it did not intend to make the bird strike criteria more stringent at altitude, and the Transport Standards Staff would look favorably upon requests for exemptions from the "V_C at 8,000 feet" requirement of § 25.571(e)(1), as amended by Amendment 25-72, until the rule can be changed in a later amendment. The airplane must be capable of successfully completing a flight during which likely structural damage occurs as a result of impact with a four pound bird at whichever true airspeed is greater, V_C at sea level or 0.85 V_C at 8,000 feet. This coincides with the corresponding Joint Aviation Authority (JAA) regulatory requirement.

"Background:

"Bombardier Inc. Canadair believe the bird impact speed required by FAR 25.571(e)(1) at Amendment 72 is erroneous and not what was intended by the Federal Aviation Administration (reference 2)[available in the Docket]. The literal requirement for bird strike criteria is more stringent at altitude, yielding about a 13% increase in true airspeed over that at sea level."

"Bombardier Inc. Canadair position:

"The Global Express is designed to assure capability of continued safe flight and landing after impact with a 4 lb. [pound] bird when aircraft velocity (relative to the bird along the aircraft's path) is equal to V_c at sea level or 0.85 V_c at 8000 feet."

Public Interest:

"This [§ 25.571(e)(1) at Amendment 72] is an unnecessary burden to Bombardier Inc. Canadair and further is not in the public interest since it can result in higher costs, higher structural weights and less efficient airplanes."

A summary of Bombardier Inc. Canadair's petition was published in the Federal Register on January 21, 1998 (63 FR 3179). No comments were received.

The FAA's analysis/summary is as follows:

The petitioner has requested relief from the requirement of § 25.571(e)(1) that the airplane must be capable of successfully completing a flight during which likely structural damage occurs as a result of impact with a four pound bird at V_c at sea level to 8,000 feet. The original bird strike provision was adopted by Amendment 25-45 and required the bird impact

to be at "likely operating speeds from sea level to 8,000 feet." The term "likely operating speed" was open to interpretation and causing confusion, so the FAA proposed a revision that would have required a specific structural design speed. The proposal was published as Notice 84-21 (49 FR 47358) on December 3, 1984. In that notice, the FAA proposed a single speed of V_C at sea level, which was consistent with other bird strike requirements in §§ 25.631 and 25.775. One commenter to the proposal pointed out that an artificially low value of V_C at sea level could be established for the sole purpose of reducing the bird impact speed. This would lead to unconservative impact airspeeds at lower altitudes where bird impacts are most likely. The FAA agreed and revised the final rule accordingly.

Most airplanes, except those with an artificially low V_C at sea level, have a near constant value of V_C knots equivalent airspeed (KEAS) from sea level to 8,000 feet. The same equivalent airspeed at 8,000 feet gives about a 13% increase in true airspeed above that at sea level. In Amendment 25-72, the FAA did not intend to make the rule more stringent at 8,000 feet than at sea level. The intent was to prevent an applicant from selecting an unrealistic value of V_C at sea level.

In conclusion, the FAA has determined that the Bombardier, Inc. Canadair BD-700-1A10, upon compliance with the stated requirements, will meet the intent of the regulations with respect to the bird impact velocities defined in § 25.571(e)(1) as amended by Amendment 25-72.

In consideration of the foregoing, I find that a grant of exemption is in the public interest and will not affect the level of safety provided by the regulations. Therefore, pursuant to the authority contained in 49 U.S.C. §§ 40113 and 44701, delegated to me by the Administrator (14 CFR § 11.53), Bombardier, Inc. Canadair is hereby granted an exemption from the bird impact speed requirement of § 25.571(e)(1) of the Federal Aviation Regulations, to the extent necessary to permit certification of the Bombardier Inc. Canadair BD-700-1A10 airplane using V_C at sea level, or 0.85 V_C at 8,000 ft., whichever is greater.

This exemption will remain in effect unless superseded or rescinded.

Issued in Renton, Washington, on February 24, 1998

/s/ Gilbert L. Thompson
Gilbert L. Thompson
Acting Manager, Transport Airplane Directorate
Aircraft Certification Service, ANM-100